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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,076	04/28/2005	Masahiko Nanri	L9289.05131	2401

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DICKINSON WRIGHT PLLC
1901 L STREET NW
SUITE 800
WASHINGTON, DC 20036

EXAMINER	
NILANONT, YOUPAPORN	
ART UNIT	PAPER NUMBER
4121	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/533,076	NANRI, MASAHIKO	
	Examiner	Art Unit	
	YOUPAPORN NILANONT	4121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 April 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *28 April 2005, 23 August 2006, 15 March 2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed on 28 April 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "new window-size information generation section" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to because:

- Figure 2 and its description in the specification appear to be inconsistent with the disclosure in Figure 3 and 4. The step ST205 shown in Figure 2 is described as "in step St205, in other words, if all packets of a transmission window size have not been received, then the process returns to step ST201" [specification, page 6 lines 26-27, page 7 lines 1]. The step ST201 shown in the same figure is described as "in step ST201, the transmitter 110 transmits packets." However in Figure 3, the drawing shows that the transmitter 110 does not send any packet until it receives

an "accumulative ACK packet", AS1. It is assumed that the applicant meant "the process returns to step ST202".

- Figure 6 and its description in the specification appear to be inconsistent with the disclosure in Figure 3 and 4 for the same reason that figure 2 is objected to. It is assumed that the applicant meant for the process to return to ST602 when not all packets have been received in ST605.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

2. Claims 1 and 4 are objected to because of the following informalities: the term "accumulative ACK" as recited in these claims and throughout the application appears to have been a minor mistake by a machine translation of a Japanese application. For examination purposes, it has been construed as being a *cumulative* ACK which is sent after a specified number of data packets have been received.

3. There is no explicit source of the threshold value used in the applicant's communication system as recited in claims 2-3. For the purposes of examination, it has been construed to be a value pre-set as known in "a conventional communication system" mentioned by the applicant [Page 1 Line 21].

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 4 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In particular, claim 4, which is directed to "a communication method," recites both an apparatus ("a transmission section that transmits") and the method of using it ("a reception step..." and "a new window-size information generation step..."), therefore the claim is directed to neither a "process" nor

a "machine," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. See *Ex parte Lyell*, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990) and MPEP 2173.05(p) section II.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 1-4 recites the term "new window-size information" which is claimed to have been generated and added to an ACK packet, has not been structurally described anywhere in the application as to what it contains. It is merely recited as information to instruct the sender what to do with the transmission window size ("the new window-size information instructs a decrease..." page 8 lines 14-19 and "the new window-size information instructs an increase..." page 9 lines 2-7), therefore renders the claims unclear.

8. Claim 4 recites "the communication system" and "the specified reference number", which lack antecedent basis. For examination purposes, they have been construed as referring to a "communication system" and a "specified reference number".

As noted above, claim 4 recites both an apparatus and method steps of using the apparatus in a single claim which renders the claim indefinite under 35 U.S.C. 112, second paragraph. See *IPXL Holdings v. Amazon.com, Inc.*, 430 F.2d 1377, 1384, 77 USPQ2d 1140, 1145 (Fed. Cir. 2005) and MPEP §2173.05(p) section II.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hadi Salim et al. (U.S. Patent 6,625,118) in view of Tam (U.S. Patent 6,622,172) and Fu et al. ("A Remedy for Performance Degradation of TCP Vegas in Asymmetric Network").

11. Regarding claim 1, the Hadi Salim reference discloses a communication system comprising (Figure 1): a transmission section that transmits ("packet sending means" column 3 lines 62-64) packets with a transmission window size determined in response to a new window-size information added to the ACK packet (column 10 lines 31-36); a reception section that receives the packets, which are transmitted from the transmission section ("input means" column 2 lines 51); and a new window-size information generation section ("packet flow control parameter generator" column 2 lines 57-59) that generates the new window-size information ("flow control parameter" column 3 lines 34-35), and that adds it to the ACK packet ("flow control parameter" column 3 lines 6-11).

12. However, the Hadi Salim reference does not explicitly disclose a communication system that uses a cumulative acknowledgement that allows receiver to send only one ACK packet to acknowledge a group of data packets received.

13. The Tam reference, on the other hand, discloses a transmission section that transmits packets with a transmission window size (see Tam column 5 lines 51-54) and a reception section that returns the accumulative ACK packet if the packet count value reaches a specified reference number corresponding to the transmission window size (see Tam column 5 lines 62-65). Since it is known in the art that the transmission window size limits the amount of packets the sender is able to send before it has to wait for an acknowledgement, it is inherent that the transmitter in Tam reference sends the next group of packets "for each accumulative ACK packet received." Additionally, because Tam's receiver waits for a number of data packets to arrive before sending an acknowledgement, it is inherent that Tam's receiver has a counting mechanism to "count the packets" it receives.

14. Hence, it would have been obvious to the person having ordinary skill in the art, at the time the invention was made, to modify the Hadi Salim's teachings with the Tam's teachings of acknowledging all the packets in one transmission window with one ACK packet in order to avoid contributing more to the network traffic and, as suggested by Tam, compensate for receiver's lower upstream bandwidth (see Tam column 4 lines 33-35).

15. Moreover, neither Hadi Salim's nor Tam's congestion control mechanism disclose an algorithm for calculating a new window size "based on a packet arrival time

required for the specified reference number of the packets corresponding to the transmission window size to arrive." The Fu reference teaches a method of calculating the new window size based on data packets arrival time. Fu suggests that the data arrival time measurement reflects the data packets congestion on the forward path.

16. Hadi Salim suggests that a different window size calculation algorithm may be appropriate for different local network characteristics (Hadi Salim column 10 lines 8-15), and Tam suggests that modifying network elements to support ECN bit is complex (Tam column 6 lines 34-37, 53-62). Additionally, the Tam reference relies on an estimated round trip time of a "probe" packet sent and received by the receiver side to determine sender's window size, to control ACK transmission timing, and thus, indirectly control the speed at which sender increase its window size. Sending an additional packet is, however, what Hadi Salim tries to avoid in the first place ("keep the number of packets returned to the source, to a minimum" Hadi Salim column 3 lines 13-14).

17. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the Hadi Salim reference's and Tam reference's congestion control algorithms with the Fu's algorithm in order to avoid having to modify all elements in the network to support Explicit Congestion Notification (ECN) and avoid adding more network traffic, and still be able to detect potential congestion on the data packets forward path.

Regarding claims 2 and 3, in addition to the limitations noted above, neither the Hadi Salim reference nor the Tam reference explicitly disclose new window size that is

generated based on a comparison between data packets arrival time and a threshold or two thresholds.

The Fu reference, conversely, teaches such limitations (see Fu, algorithm before Section III paragraph 5 and explanation in paragraph 6). The Fu algorithm discloses generation of the new window-size information indicating a decrease in the transmission window size if the packet arrival time is greater than a specific threshold value (see Fu, "if (Diff*BaseRTT > β)") and indicating an increase in the transmission window size if the packet arrival time is less than the specific threshold value (see Fu, "if (Diff*BaseRTT < α)", given that α is less than β, "< α" is naturally < β also).

In addition, the Fu reference teaches the new window-size information indicating a decrease in the transmission window size if the packet arrival time is greater than a first threshold value (see Fu, "if (Diff*BaseRTT > β)"), generates the new window-size information indicating a hold in the transmission window size if the packet arrival time is less than the first threshold value and greater than a second threshold value (see Fu, "else"), and generates the new window-size information indicating an increase in the transmission window size if the packet arrival time is less than the second threshold value (see Fu, "if (Diff*BaseRTT < α)").

It would have been obvious to one with ordinary skill in the art at the time the invention was made to substitute the Hadi Salim reference's and Tam reference's congestion control algorithms with the Fu's algorithm in order to avoid having to modify all elements in the network to support ECN and avoid adding more traffic to the network,

as explained above with respect to claim 1, and still be able to detect potential congestion on the data packets forward path.

Regarding claim 4, the Hadi Salim, Tam, and Fu references, as noted above, disclose all the limitations of claim 4 in the same manner as applied above with respect to claims 1-3.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUPAPORN NILANONT whose telephone number is (571)270-5655. The examiner can normally be reached on Monday through Thursday and alternate Friday at 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Robertson can be reached on 571-272-4186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. N./
Youpaporn Nilanont
5/22/2008
Examiner, Art Unit 4121

/David L. Robertson/
Supervisory Patent Examiner, Art Unit 4113